

EXHIBIT N



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Tomita et al.

(10) **Patent No.:** US 6,320,819 B2
(45) **Date of Patent:** Nov. 20, 2001

(54) **SEMICONDUCTOR DEVICE RECONCILING
DIFFERENT TIMING SIGNALS**

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6,064,625 5/2000 Tomita .

(75) **Inventors:** Hiroyoshi Tomita; Tatsuya Kanda,
both of Kawasaki (JP)

(73) **Assignee:** Fujitsu Limited, Kawasaki (JP)

(*) **Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

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Primary Examiner—Huan Hoang

(74) *Attorney, Agent, or Firm*—Arent Fox Kintner Plotkin
& Kahn PLLC

(21) **Appl. No.:** 09/733,961

(22) **Filed:** Dec. 12, 2000

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1999.

(30) Foreign Application Priority Data

Feb. 3, 1998 (JP) 10-022257

(51) **Int. Cl.**⁷ G11C 8/00

(52) **U.S. Cl.** 365/233; 365/189.05; 365/230.08;
365/194

(58) **Field of Search** 365/233, 189.05,
365/230.08, 194

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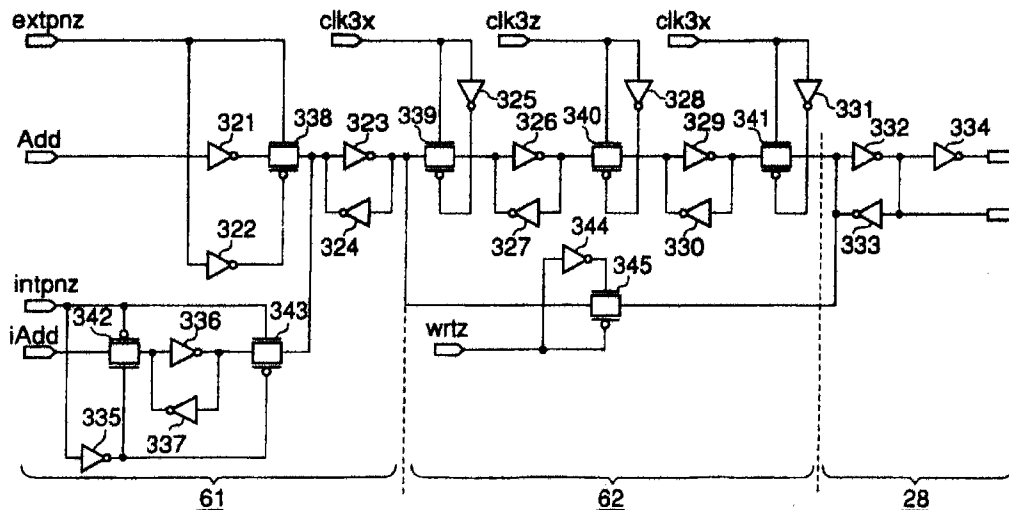
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(57) ABSTRACT

A semiconductor device which receives addresses in syn-
chronism with a clock signal and receives data in synchro-
nism with a strobe signal includes address-latch circuits, a
first control circuit which selects one of the address-latch
circuits in sequence in response to the clock signal, and
controls the selected one of the address-latch circuits to latch
a corresponding one of the addresses in response to the clock
signal, and a second control circuit which selects one of the
address-latch circuits in sequence in response to the strobe
signal, and controls the selected one of the address-latch
circuits to output a corresponding one of the addresses in
response to the strobe signal.

6 Claims, 25 Drawing Sheets



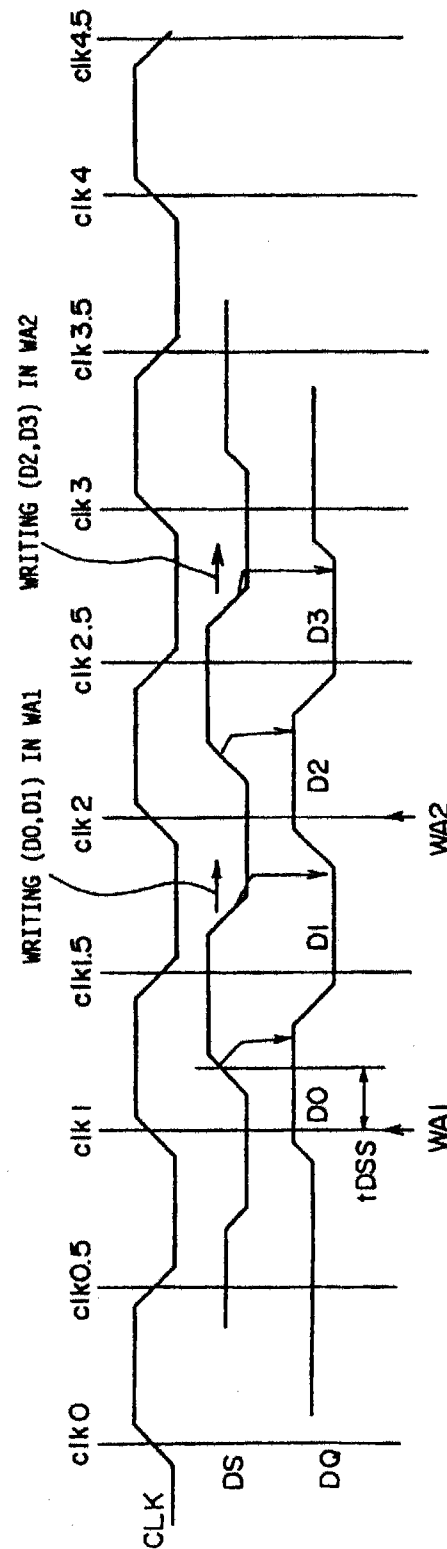
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FIG. 1



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FIG. 2

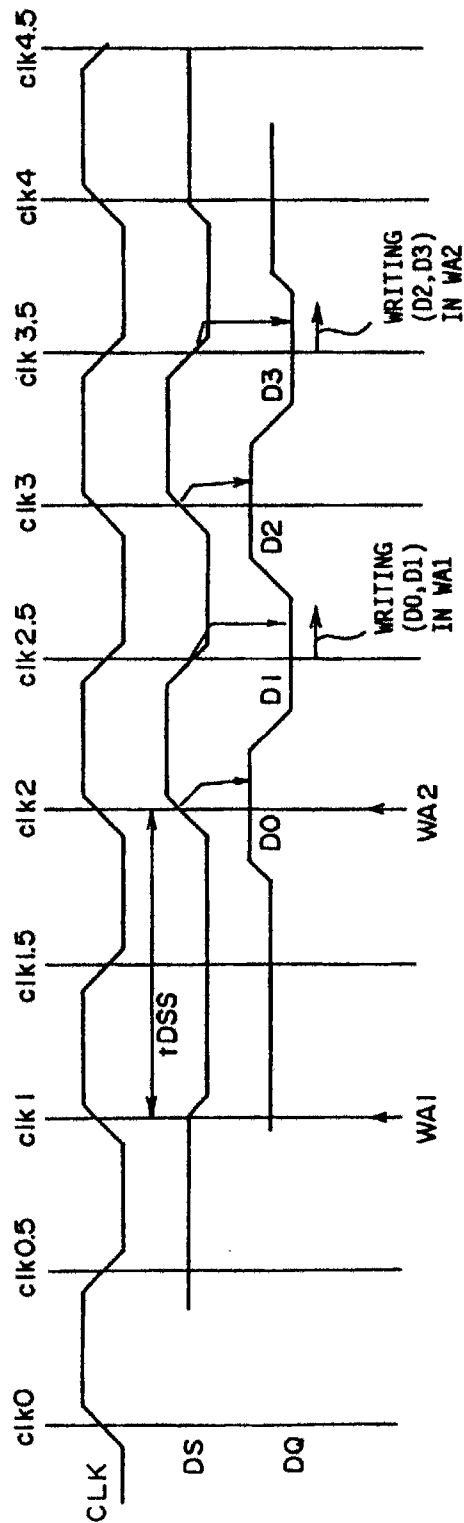
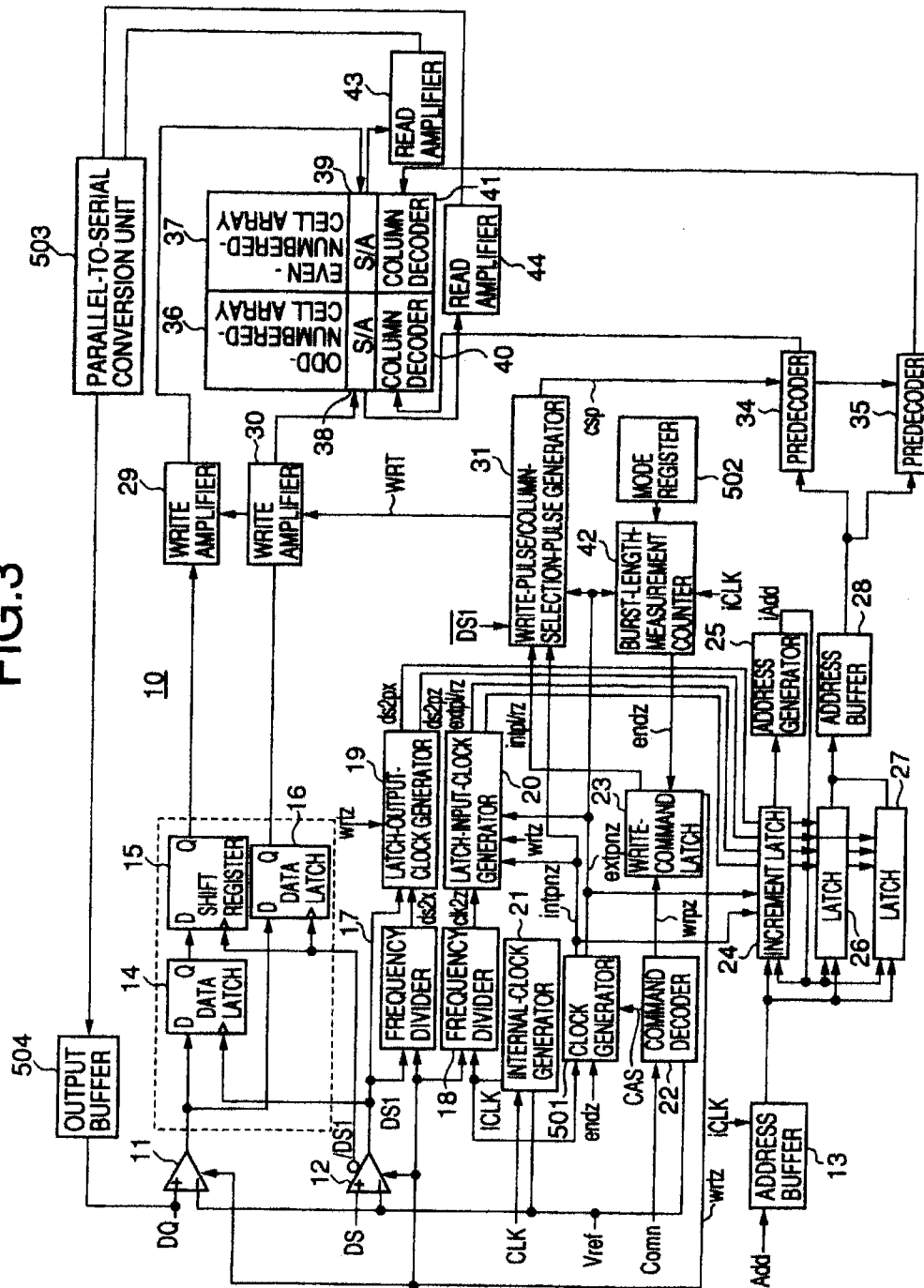


FIG. 3

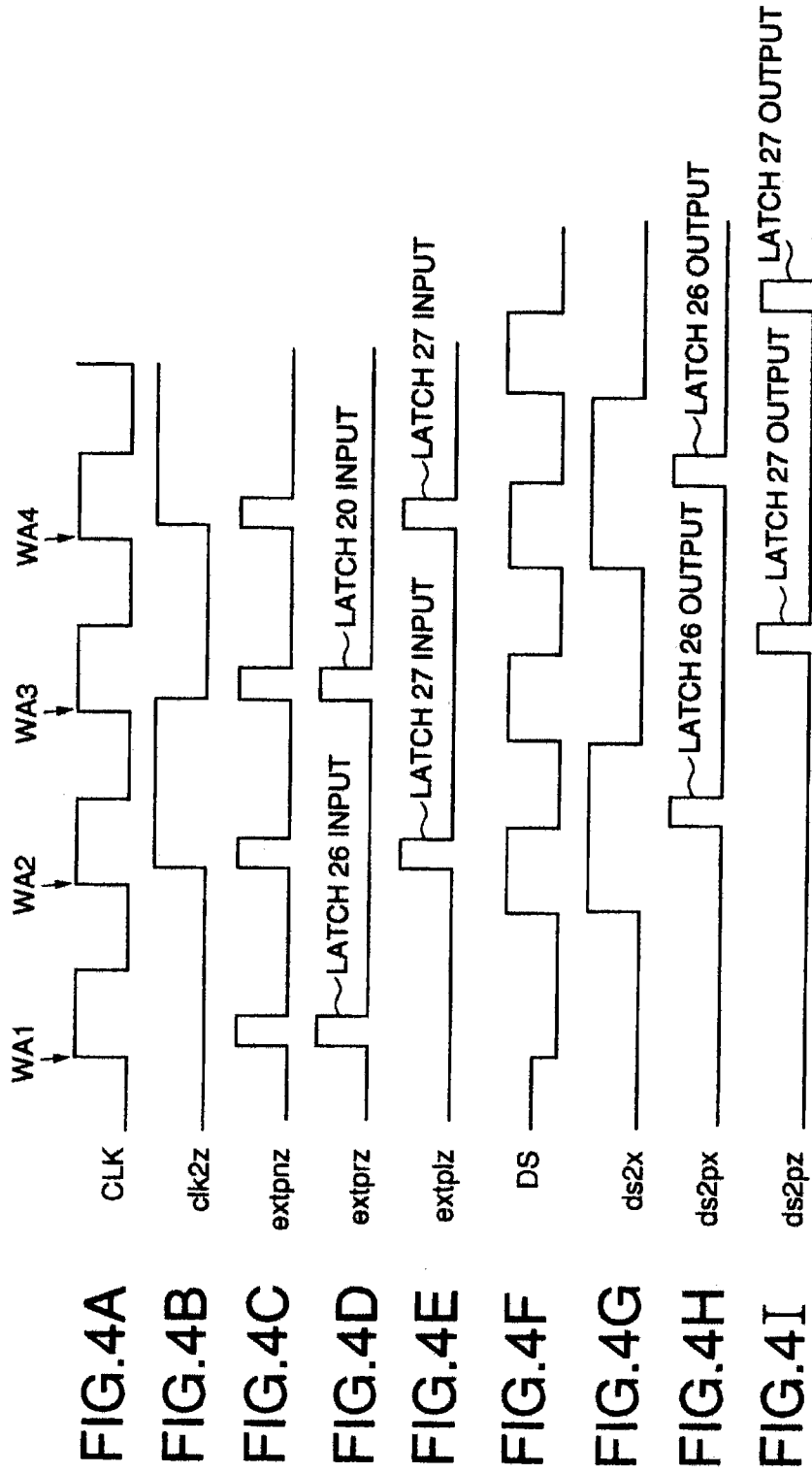


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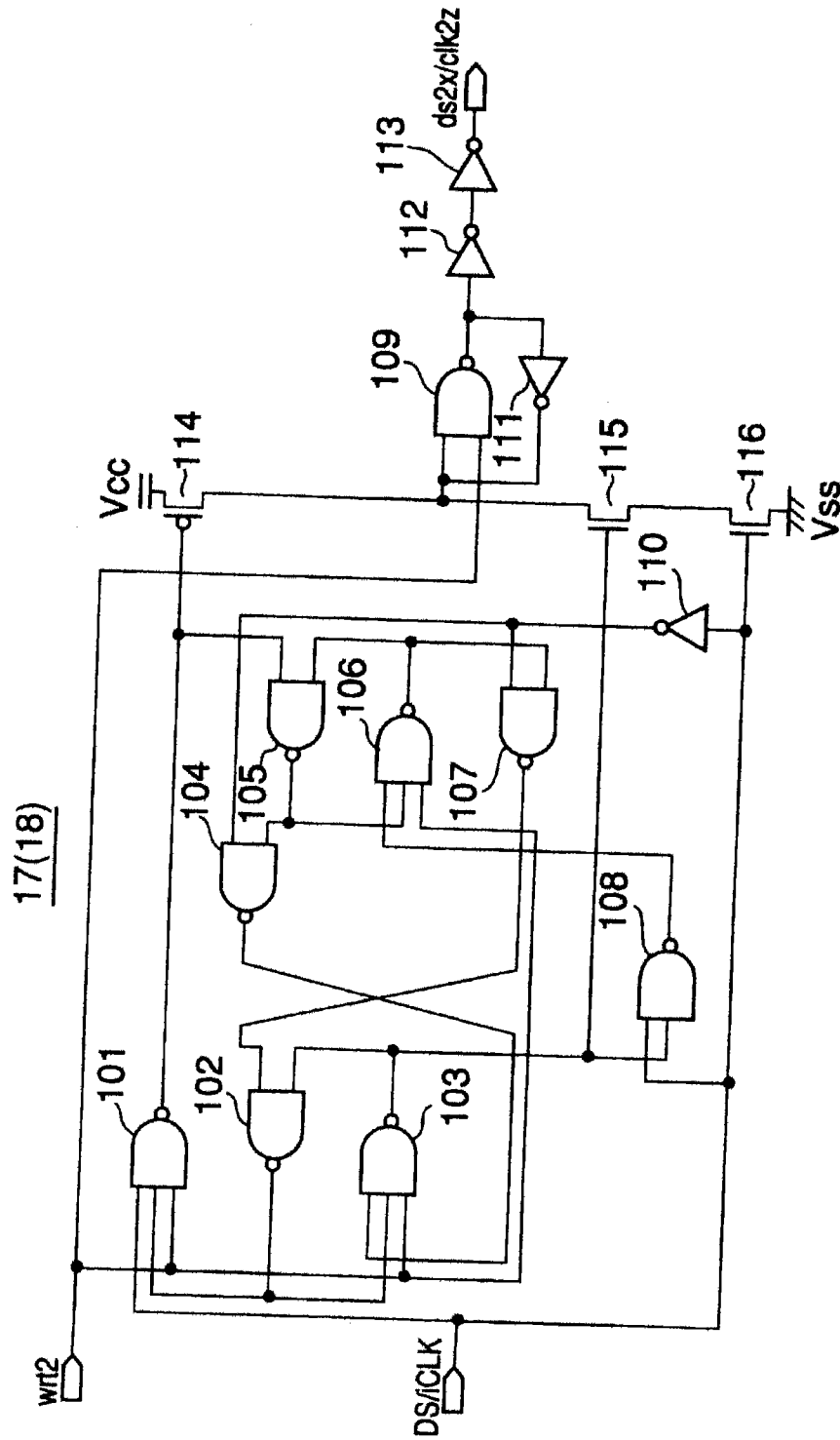
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FIG. 5



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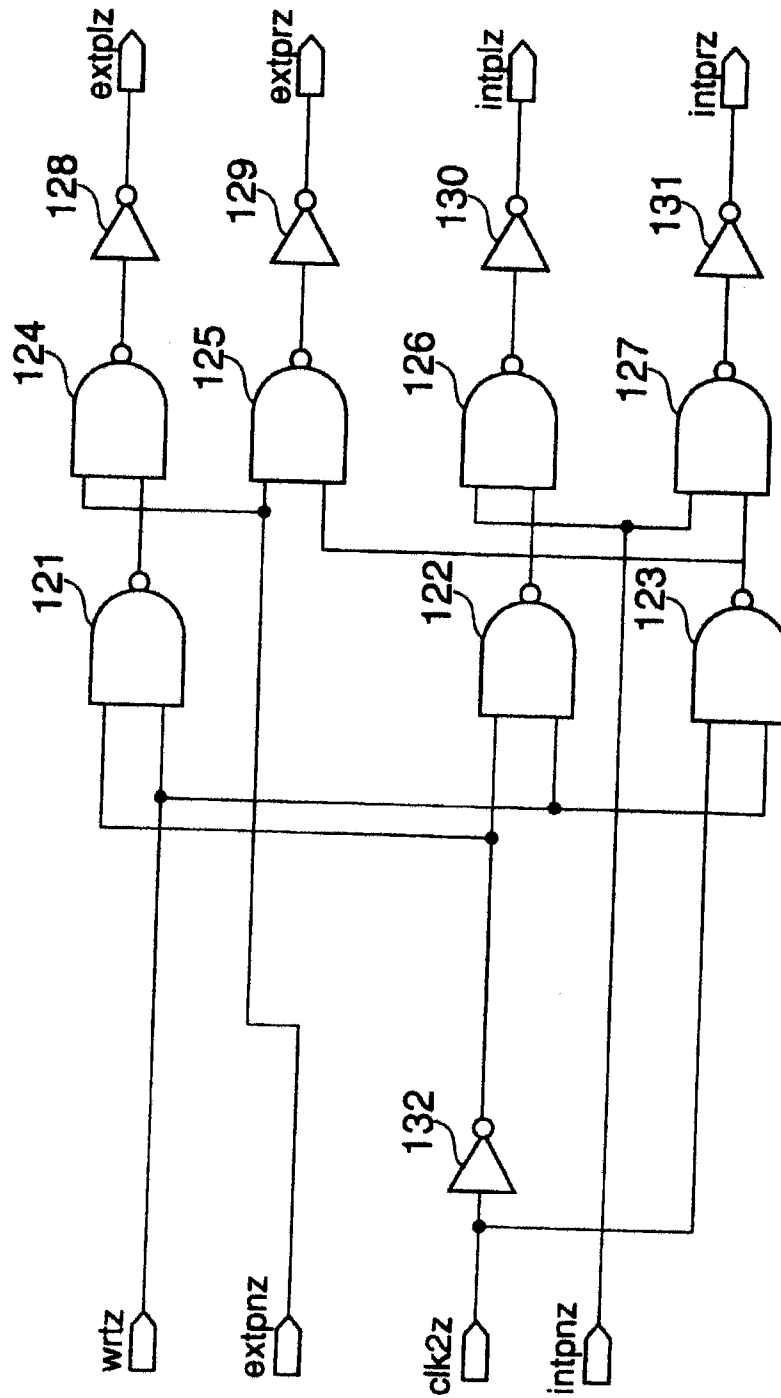
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FIG. 6

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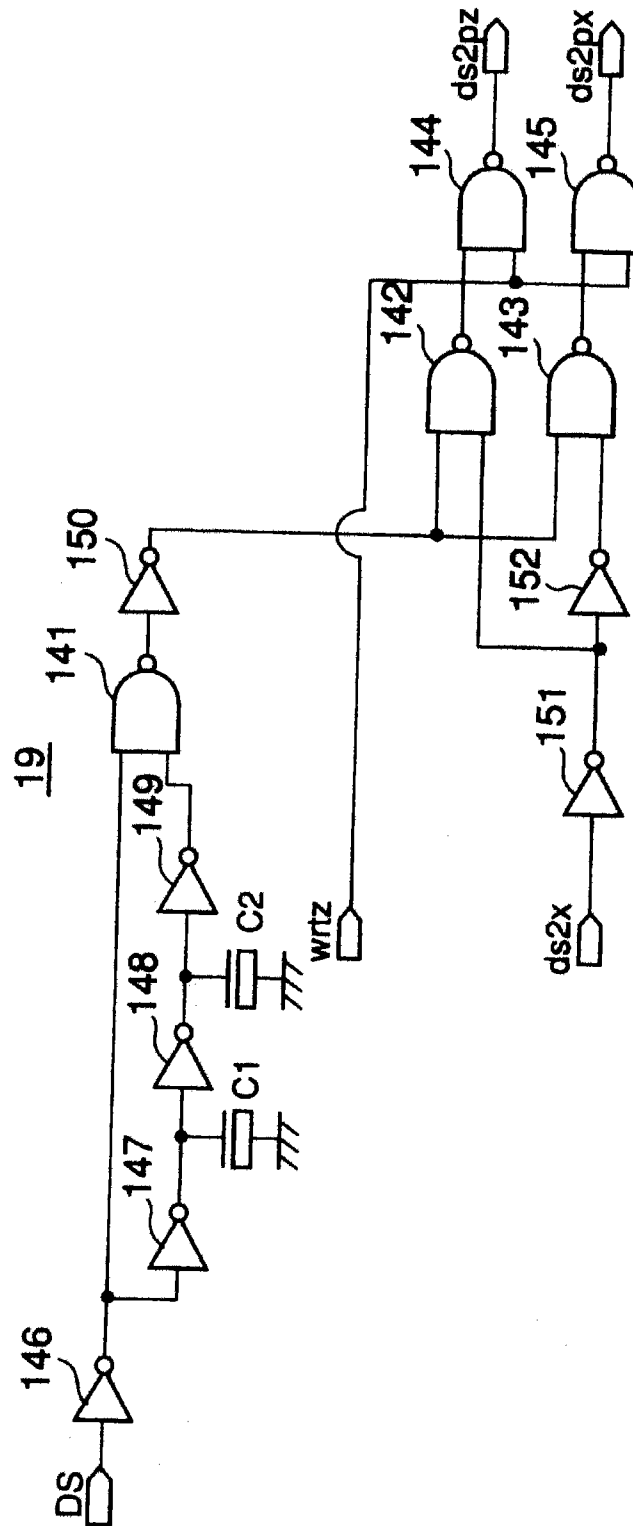
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FIG. 7



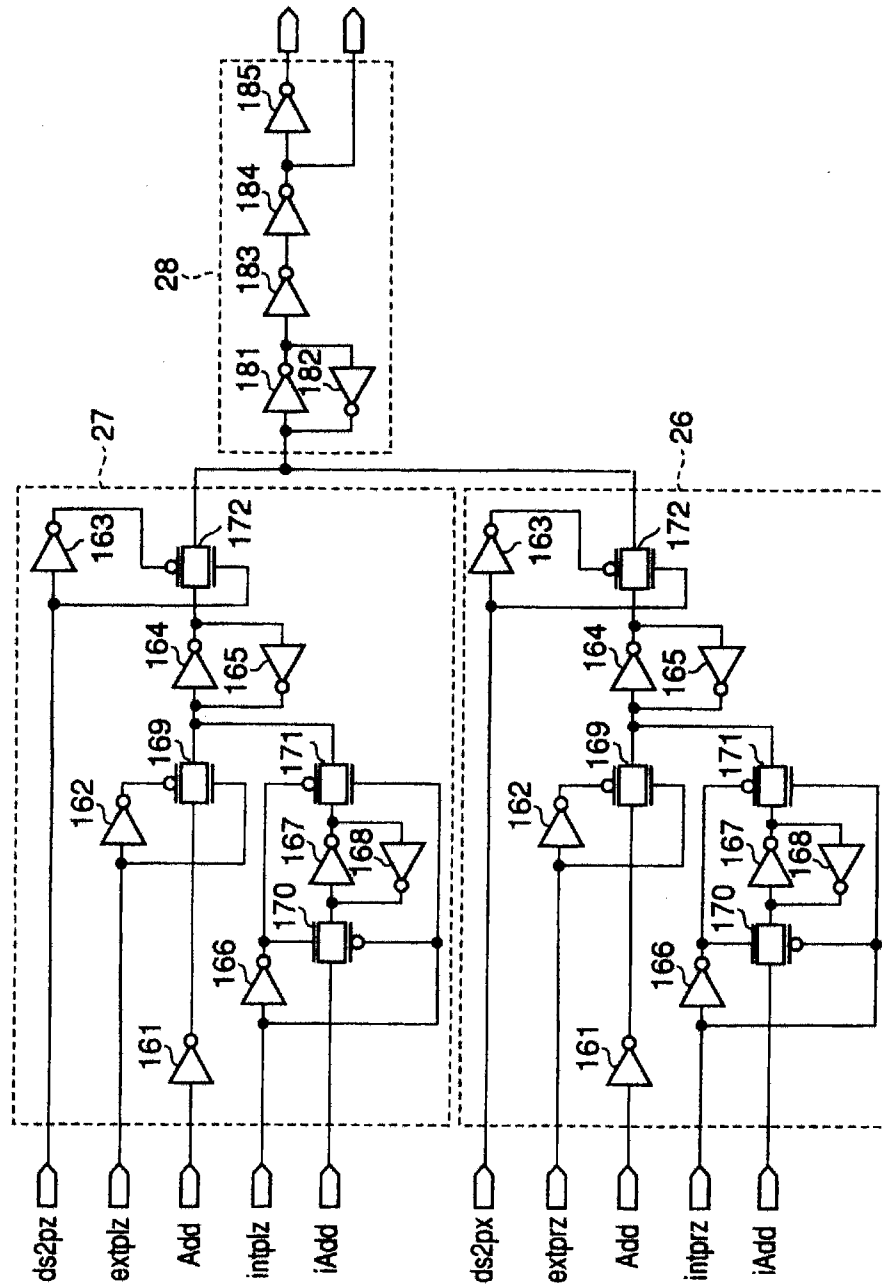
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FIG. 8



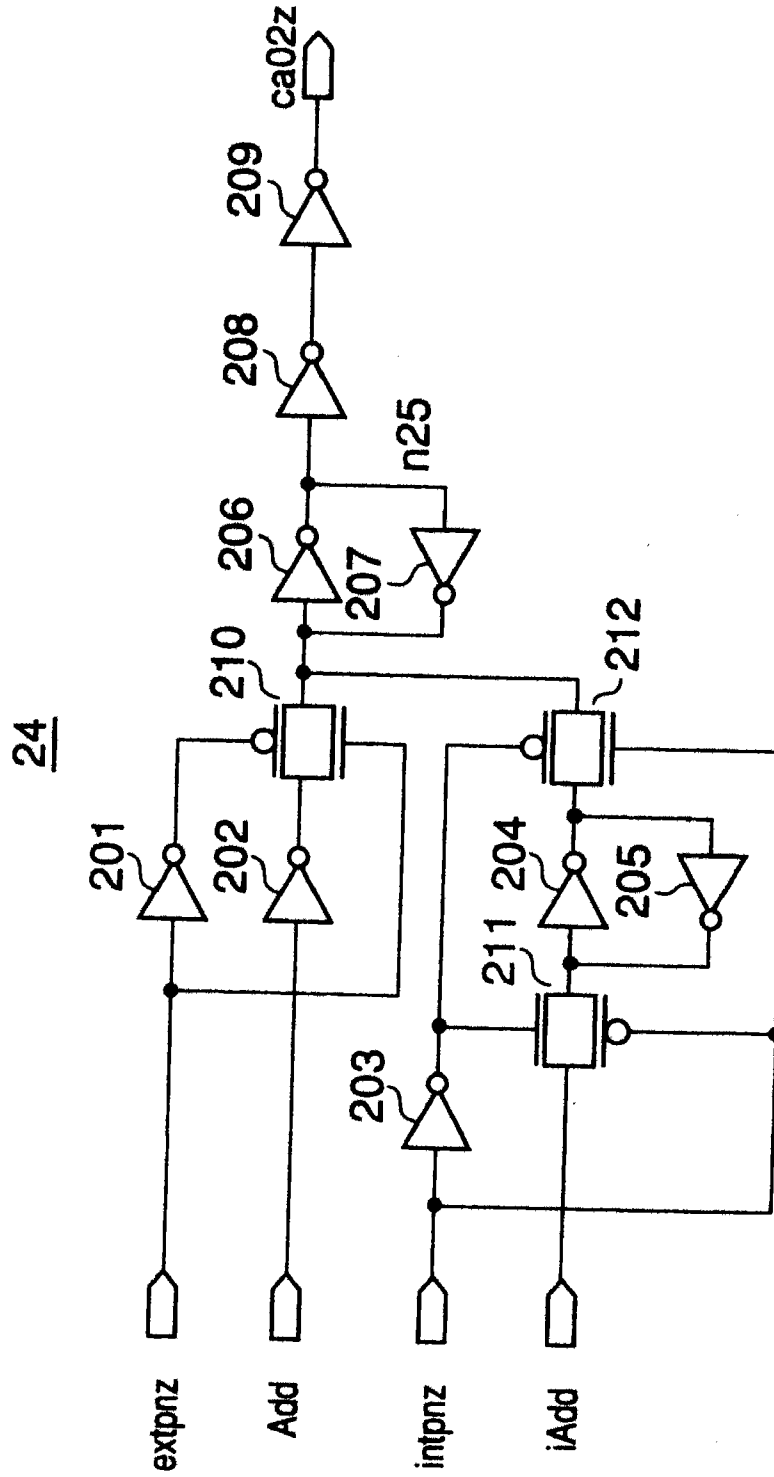
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FIG. 9



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FIG. 10

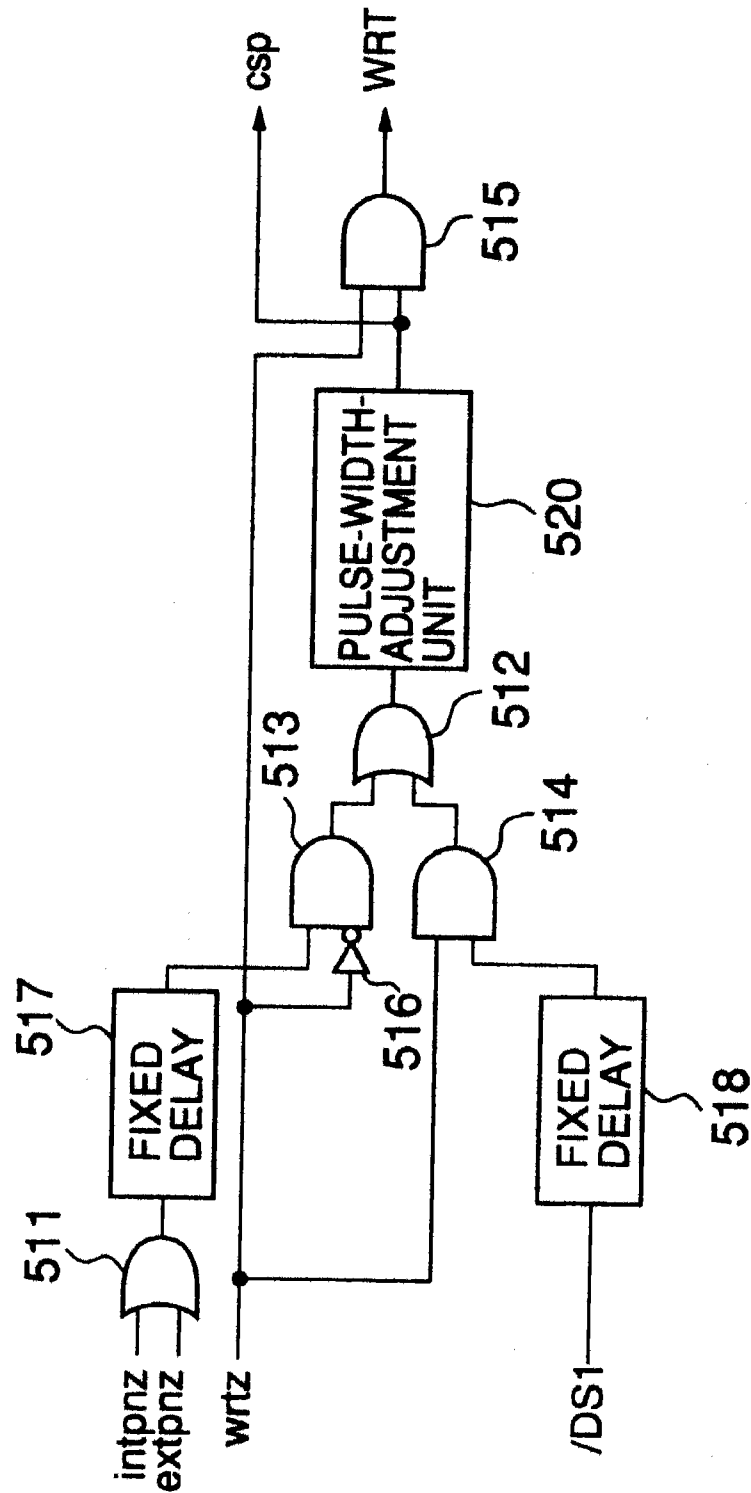
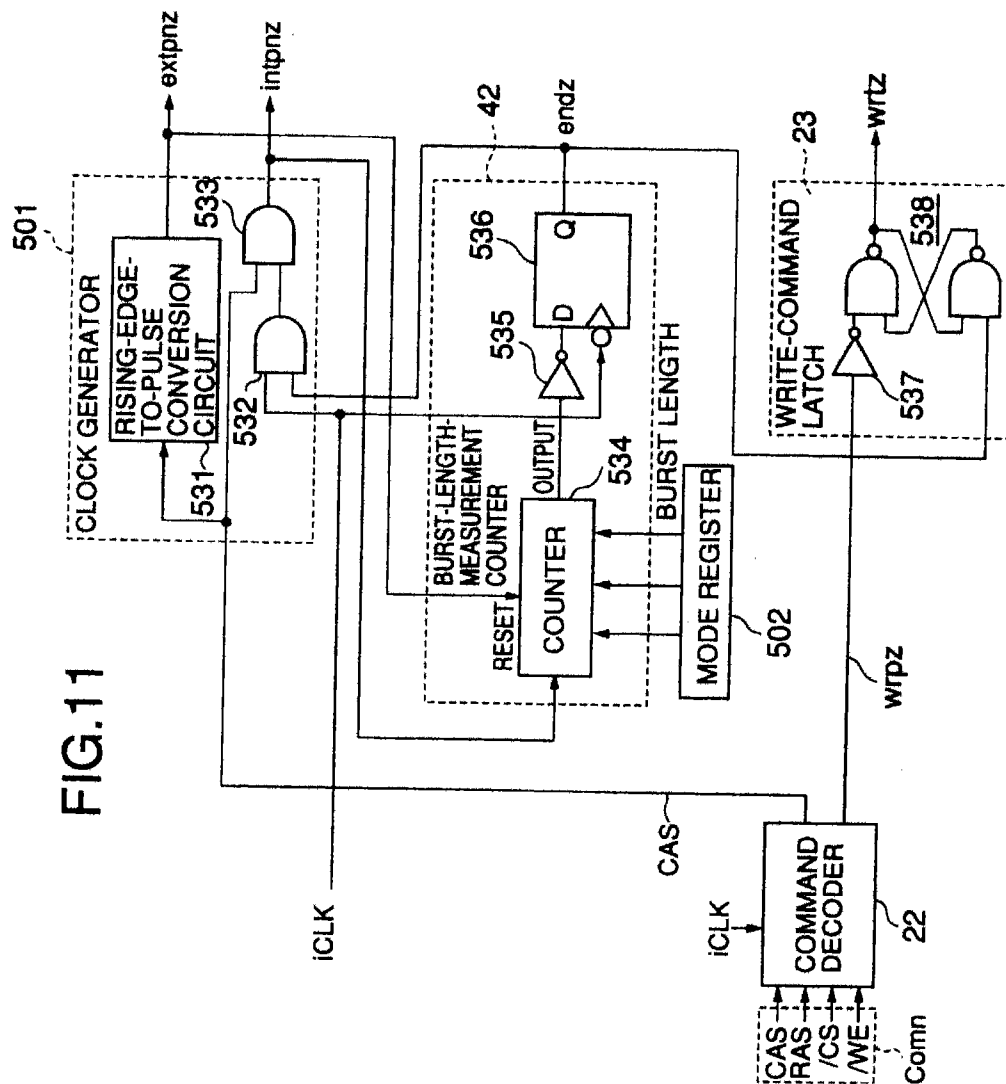


FIG. 11

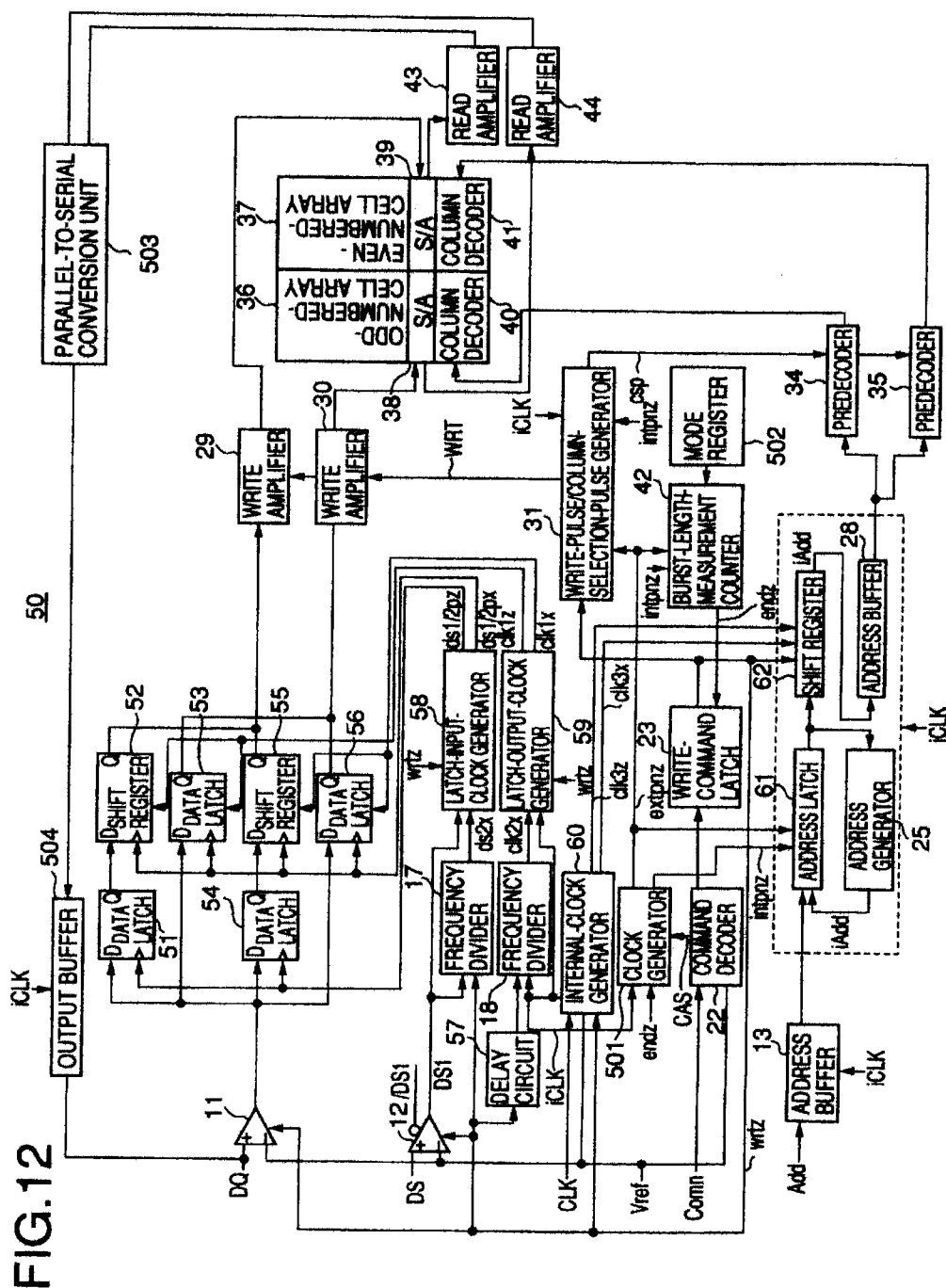


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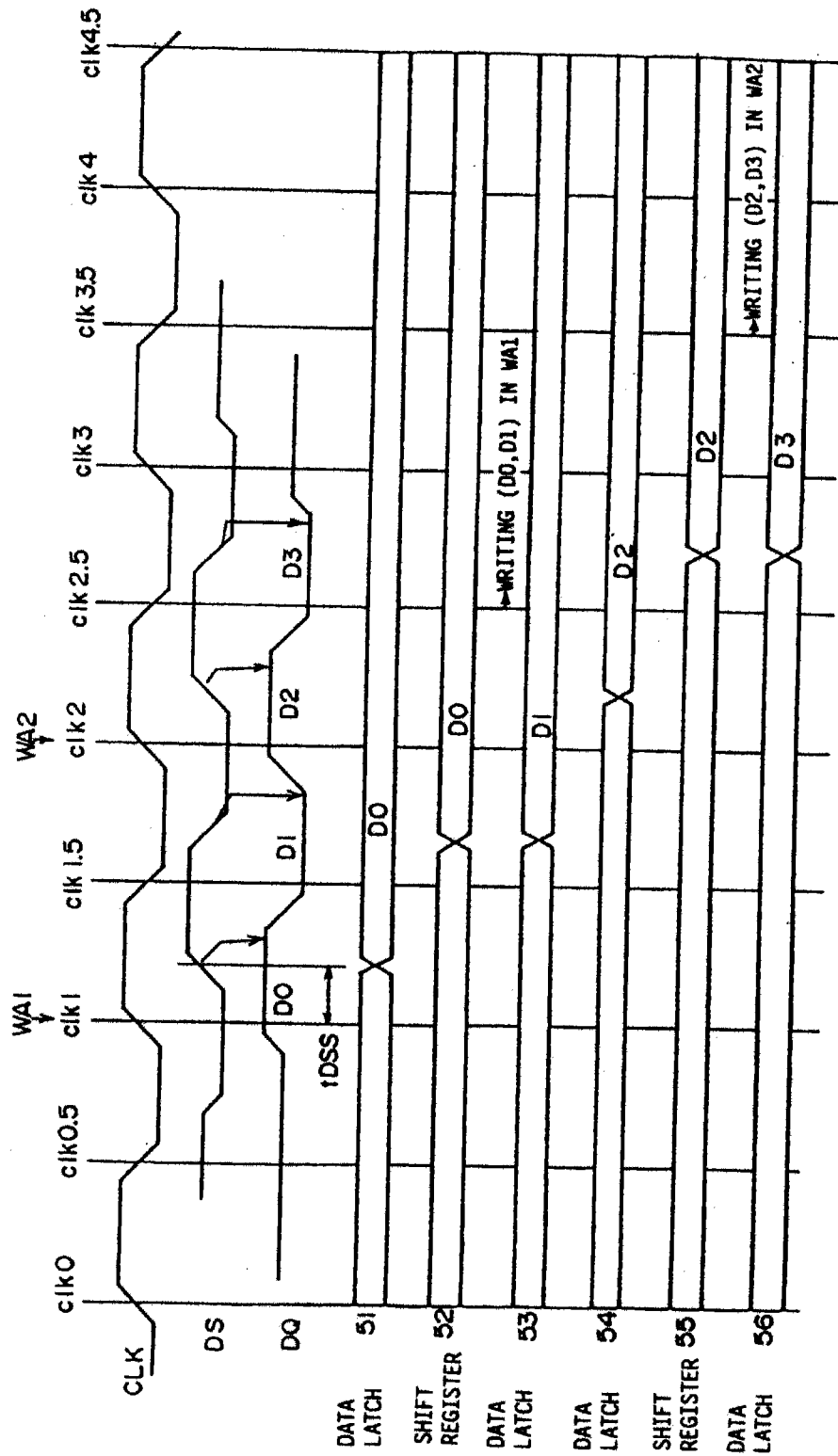
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FIG. 13



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FIG. 14

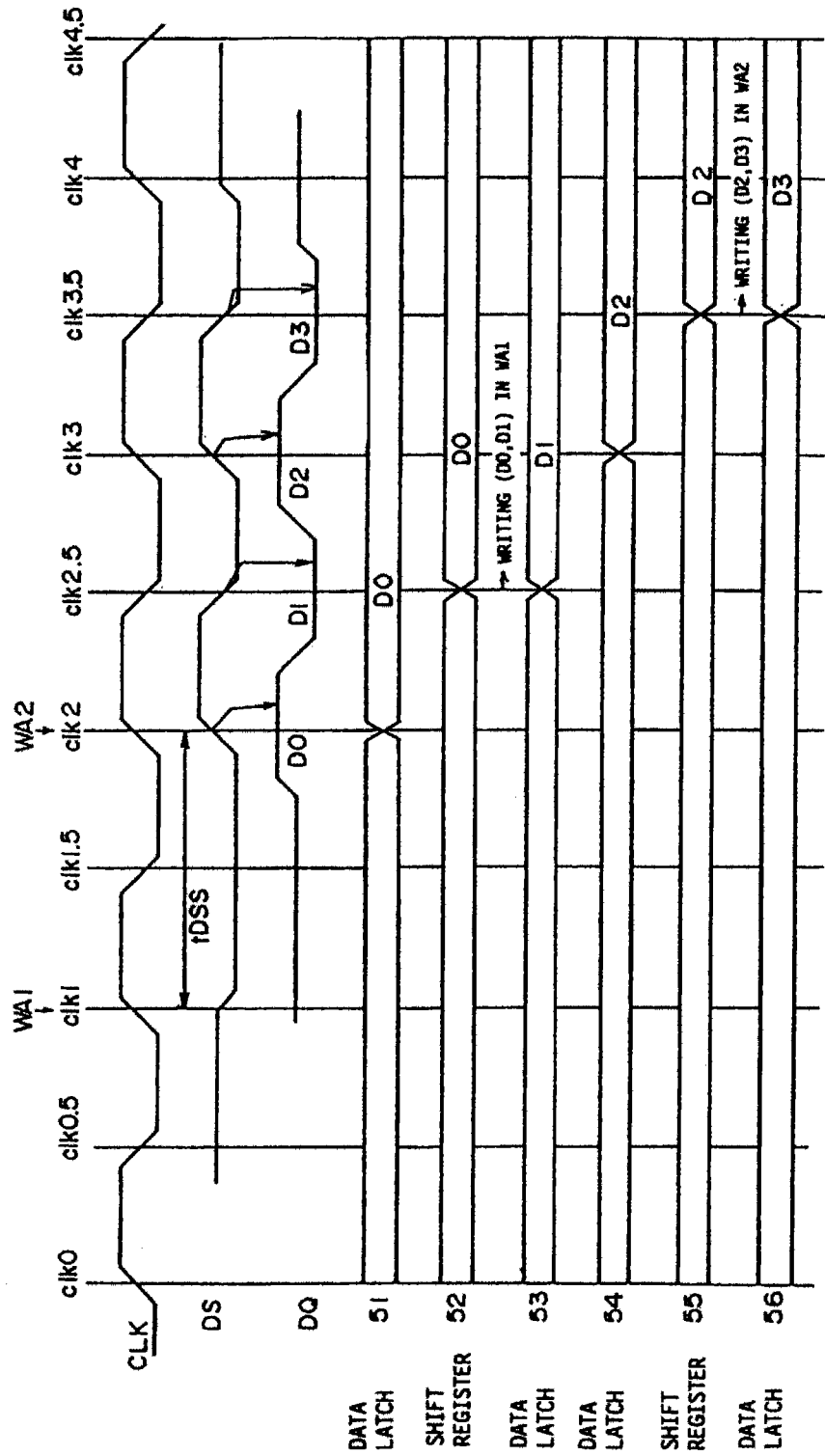
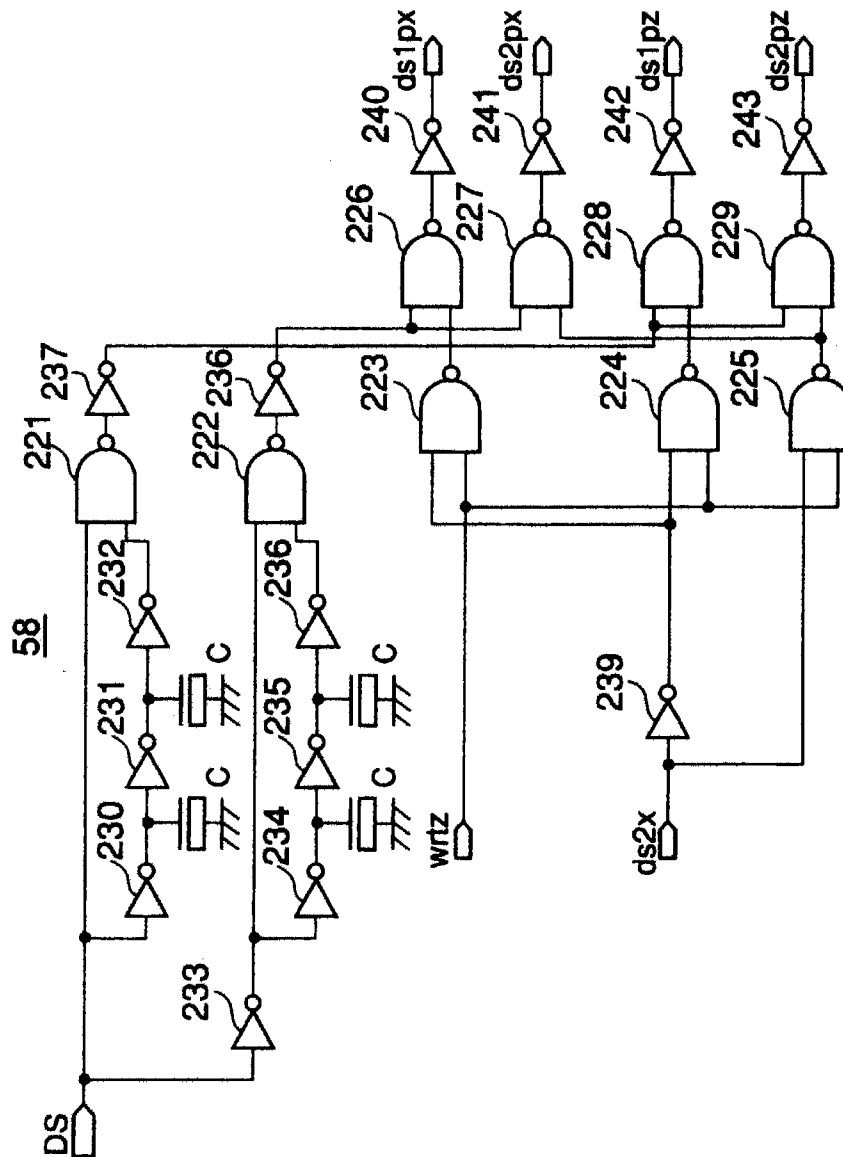


FIG. 15



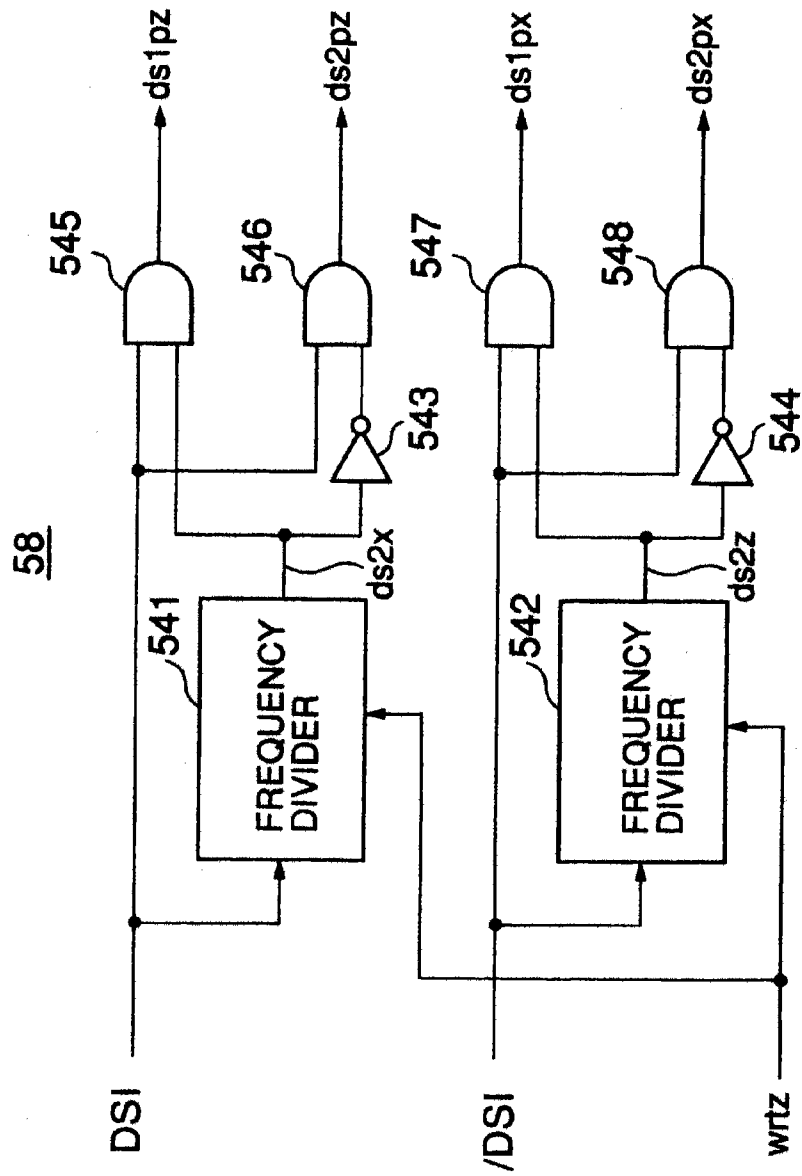
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FIG. 16



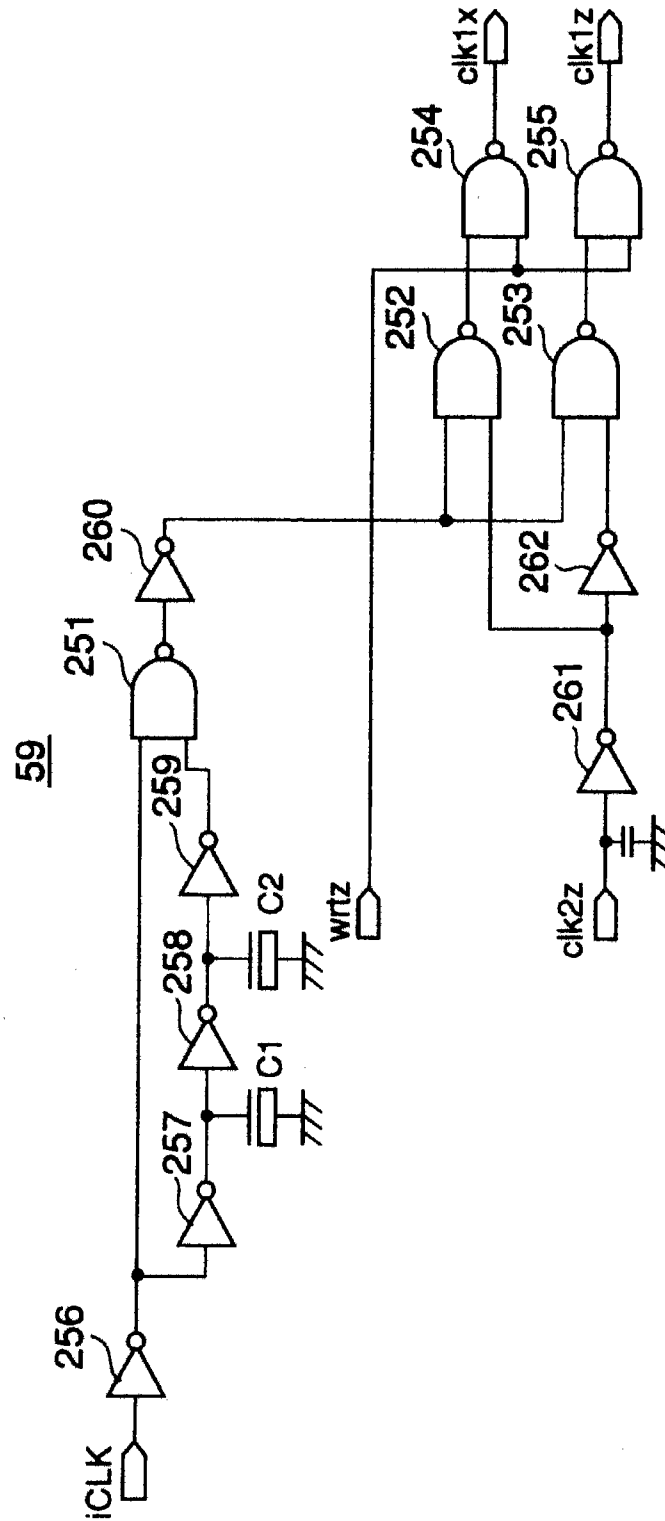
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FIG. 17



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FIG. 18

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